UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/817,534	03/26/2001	Lee W. Atkinson	COMP:0203	6811

7590 12/11/2003

Fletcher, Yoder & Van Someren
P.O. Box 692289
Houston, TX 77269-2289

EXAMINER	
PEREZ DAPLE, AARON C	

ART UNIT	PAPER NUMBER
2121	

DATE MAILED: 12/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/817,534	ATKINSON, LEE W.	
	Examiner	Art Unit	
	Aaron C Perez-Daple	2121	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on *26 March 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-45* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-45* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *2*.
4) ☐ Interview Summary (PTO-413) Paper No(s). *3*.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

1. This Action is in response to Application filed 3/26/01, which has been fully considered.

2. Claims 1-45 are presented for examination.

3. This Action is non-Final.

Election/Restrictions

4. During a telephone conversation with Tait Swanson (Reg. 48226) on 3 December 2003 a provisional election was made with traverse to prosecute the invention of a performance control system, claims 1-21 and 31-45. The restriction requirement is hereby **withdrawn**.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. **Claims 1-13** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, the limitation "to provide a desired supply" in line 2 of claim 1 renders the claim indefinite. Typically, a power supply would provide a desired voltage, current, or power output. It is not clear which is intended by the term "supply." For the purpose of applying prior art, the Examiner interprets that "supply" may comprise any one of voltage, current or power output.

7. As dependent claims, claims 2-14 are subject to the same deficiencies as claim 1. Any subsequent recitations of the term "supply" in claims 2-14 are subject to the same deficiencies and interpretation cited above.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. **Claims 1-5 and 7-45** are rejected under 35 U.S.C. 102(e) as being anticipated by Bausch et al (US 6,304,824 B1) (hereinafter Bausch).

10. As for claim 1, Bausch discloses a method for controlling performance of a computer system, comprising controlling a power supply to provide a desired supply for operating an electronic device based on an evaluation of a monitored parameter against a performance criteria for the electronic device, wherein the performance criteria comprise a relationship between temperature and power input for the electronic device [col. 2, lines 11-24, "A method and apparatus...of the IC."].

11. As for claim 2, Bausch discloses the method of claim 1, comprising obtaining the monitored parameter to determine an operating temperature of the electronic device [col. 7, lines 14-58, "Fig. 6A illustrates...to the IC 11."].

12. As for claim 3, Bausch discloses the method of claim 1, comprising sensing the monitored parameter on a processor for the electronic device [Fig. 3].

13. As for claim 4, Bausch discloses the method of claim 1, comprising evaluating the monitored parameter against the performance criteria, wherein the relationship is based on an inverse relationship between operating temperature and operating speed and a direct relationship between operating voltage and operating speed [col. 3, line 1 - col. 4, line 28, "The parameter...region of the IC."].

14. As for claim 5, Bausch discloses the method of claim 4, wherein evaluating the monitored parameter against the performance criteria comprises analyzing the monitored parameter with a logic assembly configured to determine the desired supply based on the monitored parameter, wherein the logic assembly comprises logic based on the relationship [control circuit 30, Fig. 3; col. 5, line 58 - col. 6, line 4, "Fig. 3 is a...supply 40 accordingly."].

15. As for claim 7, Bausch discloses the method of claim 4, wherein evaluating the monitored parameter against the performance criteria comprises solving a power equation for the desired supply, wherein the power equation is a function of the monitored parameter and is derived from the indirect relationship and the direct relationship [col. 3, line 1 - col. 4, line 28, "The parameter...region of the IC."].

16. As for claim 8, Bausch discloses the he method of claim 1, comprising providing a control signal configured to adjust the power supply to the desired supply, wherein the control signal is based on the evaluation [col. 2, lines 11-24, "A method and apparatus...of the IC."].

17. As for claim 9, Bausch discloses the method of claim 1, wherein controlling the power supply to provide the desired supply comprises adjusting the desired supply to substantially maintain a desired operating speed as the monitored parameter indicates a changing operating temperature of the electronic device [col. 5, lines 30-43, "Those skilled in the art...of operating temperature."].

18. As for claim 10, Bausch discloses the method of claim 1, wherein controlling the power supply to provide the desired supply comprises adjusting the desired supply to minimize power consumption and to maintain a relatively consistent computing performance as the monitored parameter indicates a changing operating temperature of the electronic device [col. 5, lines 30-43, "Those skilled in the art...of operating temperature."].

19. As for claim 11, Bausch discloses the method of claim 10, wherein adjusting the desired supply comprises reducing the desired supply as the monitored parameter indicates a decreasing operating temperature of the electronic device [col. 4, lines 39-59, "The exemplary performance...region of operation."].

20. As for claim 12, Bausch discloses the method of claim 1, comprising programming a programmable power supply to adjust the desired supply as the monitored parameter indicates a changing operating temperature of the electronic device [Fig. 3; col. 5, lines 24-43, "Another aspect...operating temperature."].

21. As for claim 13, Bausch discloses the method of claim 1, comprising integrating a temperature responsive control assembly into the computer system, wherein the temperature responsive control assembly is configured to adjust the desired supply for a central processor

based on the monitored parameter, and the monitored parameter is obtained from a temperature sensor [Fig. 3].

22. As for claim 14, Bausch discloses a method for controlling operational parameters of a computer system, comprising:

obtaining a sensor reading to determine an operating temperature [col. 7, lines 14-58, "Fig. 6A illustrates...to the IC 11."];

analyzing the sensor reading based on performance relationships for the computer system, the performance relationships comprising an inverse relationship between temperature and performance and a direct relationship between voltage and performance [col. 3, line 1 - col. 4, line 59, "The parameter...region of operation."];

determining a desired voltage level for the computer system based on a desired performance [col. 4, lines 39-59, "The exemplary performance...region of operation."]; and

providing a control signal configured for adjusting a power supply for the computer system to the desired voltage level [Fig. 3].

23. As for claim 15, Bausch discloses the method of claim 14, comprising sensing the operating temperature on a processor for the computer system [col. 7, lines 14-58, "Fig. 6A illustrates...to the IC 11."].

24. As for claim 16, Bausch discloses the method of claim 14, comprising converting the sensor reading to provide the operating temperature [col. 7, lines 14-58, "Fig. 6A illustrates...to the IC 11."].

25. As for claim 17, Bausch discloses the method of claim 14, comprising analyzing the sensor reading with a digital logic device configured to determine the desired voltage level at

the sensor reading, wherein the digital logic device has logic derived from the performance relationships [control circuit 30, Fig. 3; col. 5, line 58 - col. 6, line 4, "Fig. 3 is a...supply 40 accordingly."].

26. As for claim 18, Bausch discloses the method of claim 14, comprising analyzing the sensor reading with a control program configured to determine the desired voltage level at the sensor reading, wherein the control program has analysis routines derived from the performance relationships [control circuit 30, Fig. 3; col. 5, line 58 - col. 6, line 4, "Fig. 3 is a...supply 40 accordingly."; col. 6, lines 33-35, "Alternatively, a user...a mode control signal 90."].

27. As for claim 19, Bausch discloses the method of claim 14, comprising adjusting the power supply to relatively consistently provide the desired performance as the operating temperature varies during operation of the computer system [col. 4, lines 39-59, "The exemplary performance...region of operation."].

28. As for claim 20, Bausch discloses the method of claim 14, comprising adjusting the power supply to minimize power consumption for the desired performance as the operating temperature varies during operation of the computer system [col. 4, lines 59-65, "The exemplary low power...temperature drops."].

29. As for claim 21, Bausch discloses the method of claim 20, wherein adjusting the power supply comprises reducing the desired voltage level as the operating temperature decreases during operation of the computer system [col. 4, lines 39-59, "The exemplary performance...region of operation."].

30. As for claim 22, Bausch discloses a method of performance control for an electronic device having a processor, comprising providing a control assembly configured for monitoring an operating temperature and responsively adjusting an operating voltage as the operating temperature varies in the electronic device, wherein the control assembly has control criteria comprising a desired operating speed, an inverse relationship between operating temperature and operating speed, and a direct relationship between operating voltage and operating speed [Fig. 3; col. 5, line 58 - col. 6, line 4, "Fig. 3 is a block...supply 40 accordingly."; col. 4, lines 29-67, "Fig. 2 is a...region of operation."].

31. As for claim 23, Bausch discloses the method of claim 22, comprising providing a sensor to determine the operating temperature [Fig. 6B].

32. As for claim 24, Bausch discloses the method of claim 22, comprising coupling the control assembly to the processor [Fig. 3].

33. As for claim 25, Bausch discloses the method of claim 22, comprising coupling the control assembly to a sensor on the processor for obtaining the operating temperature [Fig. 6B].

34. As for claim 26, Bausch discloses the method of claim 22, comprising providing a logic unit configured to determine a desired operating voltage based on the control criteria [control circuit, Fig. 3; col. 5, line 58 - col. 6, line 4, "Fig. 3 is a...supply 40 accordingly."].

35. As for claim 27, Bausch discloses the method of claim 22, comprising providing a control program configured to determine a desired operating voltage based on the control criteria [col. 4, lines 29-67, "Fig. 2 is a...region of operation."; col. 5, line 58 - col. 6, line 4, "Fig. 3 is a...supply 40 accordingly."].

36. As for claim 28, Bausch discloses the for claim 28, Bausch discloses the method of claim 22, comprising relatively consistently maintaining the desired operating speed as the operating temperature varies in the electronic device [col. 5, lines 32-43, "In this approach...of operating temperature."].

37. As for claim 29, Bausch discloses the method of claim 22, comprising minimizing power consumption at a relatively consistent operating speed of the processor as the operating temperature varies in the electronic device [col. 4, lines 5967, "The exemplary low...region of operation."].

38. As for claim 30, Bausch discloses the method of claim 22, comprising providing a programmable power supply configured to responsively adjust the operating voltage as the operating temperature varies in the electronic device [power supply 40, Fig. 3].

39. As for claim 31, Bausch discloses a system for minimizing power consumption of digital logic, comprising:

a sensor signal configured for determining temperature of the digital logic [col. 7, lines 14-58, "Fig. 6A illustrates...to the IC 11."];

a control module [control circuit 30, Fig. 3] having control criteria for evaluating the sensor signal, wherein the control criteria comprise operating relationships for the digital logic comprising an inverse relationship between temperature and computing performance and a direct relationship between voltage and computing performance [col. 4, lines 29-67, "Fig. 2 is a...region of operation."; col. 5, line 58 - col. 6, line 4, "Fig. 3 is a...supply 40 accordingly."]; and

a control signal configured for adjusting a power supply for the digital logic to minimize power consumption and to provide a desired computing performance as the temperature varies for the digital logic [Fig. 3; col. 4, lines 59-65, "The exemplary low power...temperature drops."].

40. As for claim 32, Bausch discloses the system of claim 31, comprising a temperature sensor configured to provide the sensor signal [col. 7, lines 14-58, "Fig. 6A illustrates...to the IC 11."].

41. As for claim 33, Bausch discloses the system of claim 31, wherein the temperature sensor is positioned for monitoring temperature of a processor for the digital logic [Fig. 6B].

42. As for claim 34, Bausch discloses the system of claim 31, comprising an analog to digital converter configured for converting the sensor signal to units of temperature [analog to digital converter 330, Fig. 6B].

43. As for claim 35, Bausch discloses the system of claim 31, wherein the control module comprises a control program comprising the control criteria and a routine utilizing the control criteria for determining a desired operating voltage based on the sensor signal and the desired computing performance [col. 5, line 58 - col. 6, line 4, "Fig. 3 is a...supply 40 accordingly."; col. 6, lines 33-35, "Alternatively, a user...a mode control signal 90."].

44. As for claim 36, Bausch discloses the system of claim 31, wherein the control module is coupled to a processor for the digital logic [Fig. 3].

45. As for claim 37, Bausch discloses the system of claim 31, wherein the desired computing performance is a desired maximum operating speed [col. 5, lines 30-43, "Those skilled in the art...of operating temperature."].

46. As for claim 38, Bausch discloses the system of claim 31, comprising a programmable power supply configured to responsively adjust the voltage as the temperature varies to substantially maintain the desired computing performance [power supply, Fig. 3].

47. As for claim 39, Bausch discloses a system for increasing mobile operating time for a portable computing device, comprising:

a sensor for monitoring an operating temperature [Fig. 6B];

control criteria for evaluating the operating temperature, wherein the control criteria comprise operating relationships for the portable computing device comprising an inverse relationship between operating temperature and processing speed and a direct relationship between operating voltage and processing speed [col. 4, lines 29-67, "Fig. 2 is a...region of operation."; col. 5, line 58 - col. 6, line 4, "Fig. 3 is a...supply 40 accordingly."]; and

a programmable logic unit configured for adjusting operating voltage for the portable computing device to minimize power consumption while providing a desired processing speed as the operating temperature varies [control circuit 30, Fig 3].

48. As for claim 40, Bausch discloses the system of claim 39, wherein the sensor comprises a thermistor [Fig. 6A].

49. As for claim 41, Bausch discloses the system of claim 39, wherein the sensor comprises a digital thermometer [Fig. 6B].

50. As for claim 42, Bausch discloses the system of claim 39, comprising a control program configured to calculate a desired operating voltage as a function of the operating temperature and based on the control criteria and the desired processing speed [col. 4, lines 29-67, "Fig. 2

is a...region of operation."; col. 5, line 58 - col. 6, line 4, "Fig. 3 is a...supply 40 accordingly."].

51. As for claim 43, Bausch discloses the system of claim 39, wherein the sensor is disposed on a processor for the portable computing device [Fig. 6B].

52. As for claim 44, Bausch discloses the system of claim 39, wherein the programmable logic unit is coupled to a power supply for the portable computing device [Fig. 3].

53. As for claim 45, Bausch discloses the system of claim 39, wherein the programmable logic unit is coupled to a battery for the portable computing device [power supply 40, Fig. 3].

54. **Claims 1** is rejected under 35 U.S.C. 102(e) as being anticipated by Horden et al (US 5,812,860) (hereinafter Horden).

55. As for claim 1, Horden discloses a method for controlling performance of a computer system, comprising controlling a power supply to provide a desired supply for operating an electronic device based on an evaluation of a monitored parameter against a performance criteria for the electronic device, wherein the performance criteria comprise a relationship between temperature and power input for the electronic device [col. 4, lines 12-41, "In an alternate...and performance data."].

Claim Rejections - 35 USC § 103

56. **Claim 6** is rejected under 35 U.S.C. 103(a) as being unpatentable over Bausch et al (US 6,304,824 B1) (hereinafter Bausch). Although obvious to one of ordinary skill in the art, Bausch does not specifically teach searching a control table (or look-up table) for the desired supply based on the monitored parameter. "Official Notice" is given that it is both known

and expected in the art to use a control table (or look-up table) when adjusting an output based on a monitored parameter. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Bausch by searching a control table (or look-up table) for the desired supply based on the monitored parameter, because this would allow for fewer calculations and faster response time.

57. **Claim 6** is rejected under 35 U.S.C. 103(a) as being unpatentable over Horden et al (US 5,812,860) (hereinafter Horden). Although obvious to one of ordinary skill in the art, Horden does not specifically teach searching a control table (or look-up table) for the desired supply based on the monitored parameter. "Official Notice" is given that it is both known and expected in the art to use a control table (or look-up table) when adjusting an output based on a monitored parameter. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Horden by searching a control table (or look-up table) for the desired supply based on the monitored parameter, because this would allow for fewer calculations and faster response time.

Conclusion

58. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 5,153,535, note automatic selection of supply voltage; US 5,420,808, note Fig. 1; US 5,630,110, note Fig. 1; US 5,787,294, note Fig. 6; US 6,141,762, note abstract; US 6,182,232 B1, note abstract; US 6,427,211 B2, note power conservation system and method; US 6,442,697 B1, note col. 2.

59. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aaron C Perez-Daple whose telephone number is (703)305-4897. The examiner can normally be reached on 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anil Khatri can be reached on (703)305-0282. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4700.

12/4/03

Aaron Perez-Daple

ANIL KHATRI
SUPERVISORY PATENT EXAM